

CHAPTER 16.16
INTERNATIONAL FIRE CODE

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16.16.010 Adoption of the International Fire Code

A. In accordance with RCW 19.27, the International Fire Code, 2018 Edition, including Appendices B, C, D, F, H, I, K and N; published by the International Code Council, Inc., together with any additions, deletions, and exceptions currently enacted or as may be amended from time to time by the State of Washington through its Building Code Council pursuant to WAC 51-54A, and as further amended in this ordinance, are hereby adopted by this reference as if fully set forth, subject to the modifications and amendments set forth in TMC Chapter 16.16.

B. One copy of said Fire Code shall be maintained on file at the Fire Marshal's Office.

(Ord 2650 §4, 2021)

16.16.020 Enforcement

A. The International Fire Code shall be enforced by the Fire Marshal's Office within the Fire Department.

B. There shall be a Fire Marshal in charge of the Fire Marshal's Office who shall be appointed by the Chief of the Fire Department.

(Ord 2650 §5, 2021)

16.16.030 Definitions

A. Wherever the word "jurisdiction" is used in the International Fire Code, it means the area within the city limits of the City of Tukwila, Washington.

B. Wherever the words "Fire Code Official" are used in the International Fire Code, they mean the Fire Marshal in charge of the Fire Marshal's Office or designee.

C. "Special Event" refers to an event taking place within the City of Tukwila that will not last more than 21 consecutive days, that is not customary at that location and would otherwise be prohibited. Examples include a large event (public/corporate/private), fair, carnival, circus, or athletic event. Prior approval is required for an event to be held on City property.

(Ord 2650 §6, 2021)

16.16.040 Amendments to the International Fire Code

Refer to the following chapters of the Tukwila Municipal Code for additional Fire Code regulations and requirements:

- TMC 14.24, Fire Hydrants
- TMC 16.40, Fire Alarm Systems
- TMC 16.42, Sprinkler Systems
- TMC 16.46, Fire Protection in Mid-Rise Buildings
- TMC 16.48, Fire Protection in High-Rise Buildings

A. Section 104.10.1 of the International Fire Code entitled "Assistance from other agencies" is amended by substituting the following:

Section 104.10.1 **Assistance From Other Agencies.** Police and other enforcement agencies shall have authority to render necessary assistance in the investigation of fires or the enforcement of the Fire Code as requested by the Fire Marshal.

B. Section 105 of the International Fire Code entitled "Permits" is amended by adding the following new subsection 105.5.3:

Section 105.5.3 **Limited Use Permits.** Operations or events that are regulated by the International Fire Code and will not exceed 180 days will require a **Limited Use Operational Permit.**

Depending on the operation or event, a City of Tukwila Special Event Permit may also be required.

C. Section 105 of the International Fire Code entitled "Permits" is amended by modifying subsection 105.6 with the following:

Section 105.6 **Required Operational Permits.** The Fire Marshal is authorized to issue operational permits for the operations set forth in Sections 105.6.1 through 105.6.53.

D. Section 105 of the International Fire Code entitled "Permits" is amended by adding the following new subsection 105.6.31.3:

Section 105.6.31.3 **Mobile Operations.** For mobile operations or activities that are regulated by Section 105.6 of the International Fire Code, the Fire Marshal has the option to recognize a "vehicle specific" operational permit that has been issued by another public fire agency within King County and is still valid. If this permit is recognized by the Fire Marshal, a "vehicle specific" Mobile Operational Permit will be issued for operations in Tukwila. The Fire Marshal retains the right to not recognize operational permits from other fire agencies and can revoke an operational permit that has already been issued.

E. Section 105 of the International Fire Code entitled "Permits" is amended by adding the following new subsection 105.6.53:

Section 105.6.53. **Emergency and Standby Power Systems.** An Operational Permit is required for emergency or standby power systems required by code and identified in NFPA 110.

F. Section 105 of the International Fire Code entitled "Permits" is amended by modifying subsection 105.7 with the following:

Section 105.7 **Required Construction Permits.** The Fire Marshal is authorized to issue construction permits for work set forth in Sections 105.7.1 through 105.7.29.

G. Section 105 of the International Fire Code entitled "Permits" is amended by adding the following new subsection 105.7.28:

Section 105.7.28 **Emergency and Standby Power Systems.** A Construction Permit is required for the installation of emergency or standby power systems required by code and identified in NFPA 110.

H. Section 105 of the International Fire Code entitled "Permits" is amended by adding the following new subsection 105.7.29:

Section 105.7.29 **Fire Access and Infrastructure.** A Construction Permit is required for the installation of Fire Access Roads, Private Fire Hydrants, and Gates across Fire Access Roads.

I. Section 106 of the International Fire Code entitled "Fees" is amended by substituting subsection 106.1 with the following:

Section 106.1 **Fees.** A fire permit shall not be issued until the fees have been paid as required and in accordance with the Fire Department Fee Schedule adopted by resolution of the City Council, nor shall an amendment to a permit be released until the additional fee, if any, has been paid.

J. Section 106 of the International Fire Code entitled "Fees" is amended by substituting subsection 106.3 with the following:

Section 106.3 **Working Without An Issued Fire Permit.** Any person who commences any work, activity or operation regulated by this code before obtaining the necessary fire permits shall be charged an investigation fee that is equal to the permit fee, which shall be in addition to the required permit fee. This provision does not apply to emergency work, activity, or operations when it is proved to the satisfaction of the Fire Marshal that such work, activity, or operation was urgently necessary and that it was not practical to obtain a permit before commencement of the work, activity or operation. In all such cases, a fire permit must be applied for within 5 working days, or a double fee will be charged.

K. Section 108 of the International Fire Code entitled "Maintenance" is amended by substituting 108.3 with the following:

Section 108.3 **Recordkeeping.** A record of periodic inspections, tests, servicing and other operations and maintenance shall be maintained on the premises or other approved location for not less than 3 years, or a different period of time where specified in this code or referenced standards.

1. Records shall be made available for inspection by the Fire Marshal, and a copy of the records shall be provided to the Fire Marshal upon request. This applies to all life safety systems regulated by the Fire Code that require periodic testing, inspections, and maintenance.

2. The Fire Marshal is authorized to prescribe the form and format of such recordkeeping.

3. The Fire Marshal is authorized to require that certain required records be filed with the Fire Marshal.

4. Effective February 1, 2021, all confidence test reports must be filed with the Compliance Engine (<https://www.TheComplianceEngine.com/>).

L. Section 109 of the International Fire Code entitled "Board of Appeals" is amended by substituting the following:

Section 109 **Appeals.**

1. Whenever the Fire Marshal disapproves an application or refuses to grant a permit applied for, the applicant may appeal the decision to the City's Hearing Examiner. A written notice of appeal shall be filed with the City Clerk within 14 days of the date of final decision by the Fire Marshal. The notice of appeal must be accompanied by an appeal fee in accordance with the Fire Department Fee Schedule adopted by resolution of the City Council.

2. The Notice of Appeal shall contain the following information:

a. The name of the appealing party.

b. The address and phone number of the appealing party; and if the appealing party is a corporation, association or other group, the address and phone number of a contact person authorized to receive notices on the appealing party's behalf.

c. A statement identifying the decision being appealed and the alleged errors in that decision.

d. The Notice of Appeal shall state specific errors of fact or errors in application of the law in the decision being appealed, the harm suffered or anticipated by the appellant, and the relief sought. The scope of an appeal shall be limited to matters or issues raised in the Notice of Appeal.

3. Upon timely filing of a Notice of Appeal, the Fire Marshal shall set a date for hearing the appeal before the City's Hearing Examiner. Notice of the hearing will be mailed to the applicant.

4. Deference shall be given to the decision being appealed. The standard on review shall be based upon a preponderance of evidence. The Hearing Examiner may affirm, reverse or modify the Fire Marshal, or designee's, decision.

5. The decision of the Hearing Examiner shall be final.

M. Section 110 of the International Fire Code entitled "Violations" is amended by substituting subsection 110.4 with the following:

Section 110.4 Violations and Penalties.

1. Any person who shall violate any of the Fire Code provisions of TMC Chapter 16 or the International Fire Code or who shall fail to comply therewith, or who shall violate or fail to comply with any order made thereunder, or who shall build in violation of any detailed statement of specifications or plans submitted and approved thereunder or any certificate or permit issued thereunder and from which no appeal has been taken, or who shall fail to comply with such an order as affirmed or modified by the Fire Marshal or by a court of competent jurisdiction within the time fixed therein, shall be guilty of a gross misdemeanor, and upon conviction thereof, shall be punished by a fine in an amount not to exceed \$5,000.00, as outlined in IFC Section 110.4, or imprisonment for a term not to exceed one year or by both such fine and imprisonment.

2. The imposition of one penalty for any violation shall not excuse the violation or permit it to continue. Each day or portion thereof during which any violation of the provisions of this section is caused, permitted, or continued shall constitute a separate offense and shall be punishable as such. Application of the penalty specified in this section shall not be held to prevent the enforced removal of prohibited conditions.

3. Fire lane parking violations shall be considered a non-traffic civil infraction subject to the fine listed in the Fire Penalty Bail Schedule, and the vehicle may be impounded.

4. In addition to the imposition of the penalties herein described, the Fire Marshal is authorized to institute appropriate action to prevent unlawful construction or to restrain, correct or abate a violation; or to prevent illegal occupancy of a structure or premises; or to stop an illegal act, conduct of business or occupancy of a structure on or about any premises.

5. Fire Penalty Bail Schedule:

OFFENSE	BAIL
Non-compliance with orders and notices	\$5,000.00
Unlawful removal of a tag	\$5,000.00
Unlawful continuance of a hazard	\$5,000.00
Non-compliance with a Stop Work Order	\$5,000.00
Illegal parking on fire apparatus access roads / Fire Lane	\$100.00
Failure to: Clean commercial kitchen hoods	\$500.00
Failure to: Maintain fire protection systems	\$500.00
Failure to: Conduct a required fire watch	\$500.00
Failure to: Maintain commercial cooking extinguishing systems	\$500.00
Failure to: Maintain means of egress continuity	\$250.00
Failure to: Provide required UL central station monitoring	\$500.00

6. **Other Violations.** Bail for all other violations is \$250.00 plus court costs. Fines are forfeitable on the first offense and mandatory appearance is required on second offense.

N. Section 308 of the International Fire Code entitled "Open Flames" is amended by substituting subsection 308.1.6.3 with the following:

Section 308.1.6.3 **Sky Lanterns.** The use of sky lanterns is prohibited.

O. Local amendments to Chapter 5 of the International Fire Code entitled "Fire Service Features," including all amendments enacted by the State of Washington, are adopted and incorporated into the International Fire Code as follows:

Section 503 and Appendix D of the International Fire Code entitled "Fire **Apparatus Access Roads**" are hereby adopted with the exception of Sections D103.2, D103.5 and D107.1.

P. Section 503 of the International Fire Code entitled "Buildings and Facilities" is amended by substituting subsection 503.1.1 with the following:

Section 503.1.1 **Buildings and Facilities.** Approved fire apparatus access roads shall be provided for every facility, building or portion of a building hereafter constructed or moved into or within the jurisdiction. The fire apparatus access road shall comply with the requirements of this section and shall extend to within 150 feet (45,720 mm) of all portions of the facility and all portions of the exterior walls of the first story of the building as measured by an approved route around the exterior of the building or facility.

Exceptions: The Fire Marshal is authorized to increase the distance:

1. Up to 200 feet where the building is equipped throughout with an approved automatic sprinkler system installed.

2. Where fire apparatus access roads cannot be installed because of location on property, topography, waterways, nonnegotiable grades or other similar conditions, and an approved alternative means of fire protection is provided.

Alternate means may include installation of stairs that extend to the roof, sprinkler system, fire alarm system, standpipes, smoke control system, ready access to fire service elevators and others (sometimes in combination) to mitigate the additional access distance.

3. There are not more than two Group R-3 or Group U occupancies.

Q. Section 503 of the International Fire Code entitled "Additional Access" is amended by substituting subsection 503.1.2 with the following:

503.1.2 **Additional Access.** The Fire Marshal is authorized to require more than one fire apparatus access road based on the potential for impairment of a single road by vehicle congestion, condition of terrain, climatic conditions or other factors that could limit access.

R. Section 503 of the International Fire Code entitled "High-Piled Storage" is amended by substituting subsection 503.1.3 with the following:

503.1.3 **High-Piled Storage.** Fire department vehicle access to buildings used for high-piled combustible storage shall comply with the applicable provisions of Chapter 32.

S. Section 503 of the International Fire Code entitled "Fire Apparatus Access Roads" is amended by substituting subsection 503.2.1 with the following:

Section 503.2.1. **Dimensions.** The following minimum dimensions shall apply for fire apparatus access roads:

1. Fire apparatus access roads and fire lanes shall have an unobstructed width of not less than 20 feet (6,096 mm), and an unobstructed vertical clearance of not less than 13 feet 6 inches (4,115 mm).

2. Fire apparatus access road routes shall be approved by the Fire Marshal.

Exception: When the fire apparatus access road is serving no more than 2 single family houses and all are equipped with approved automatic sprinkler system, the Fire Marshal may approve a reduced width, but the reduction shall not be less than 16 feet wide.

T. Section 503 of the International Fire Code entitled "Fire Apparatus Access Roads" is amended by substituting subsection 503.2.3 with the following:

Section 503.2.3. **Road Surface.** Fire apparatus access roads shall be constructed with a surface of asphalt or concrete or other permanent material approved by the Fire Marshal capable of supporting the imposed load of fire apparatus weighing at least 85,000 lbs.

U. Section 503 of the International Fire Code entitled "Fire Apparatus Access Roads" is amended by substituting subsection 503.2.4 with the following:

Section 503.2.4. **Fire Access Road Turning Radius.** All fire apparatus access roads shall have a 28-foot minimum inside turning radius (curb radius) and a 50-foot minimum outside turning radius, unless otherwise approved by the Fire Marshal.

1. The radius is measured from the travel lane edge (curb).

2. When turning from the right of way (ROW) to an access road, the minimum effective turning radius will be measured from the inside tire and no further from the center of the lane in the direction of travel. The size of curb radii to be as necessary to facilitate minimum effective turning radius.

V. Section 503 of the International Fire Code entitled "Fire Apparatus Access Roads" is amended by adding the following new subsection 503.2.4.1:

Section 503.2.4.1. **Fire Access Road Turnarounds.** Where dead-end fire apparatus access roads require an approved turnaround, it shall be in accordance with one of the following.

1. For fire access roads serving no more than 4 single-family homes where the vertical distance between the grade plane and the highest point of the roof eave is no more than 30 feet for any of the structures served by the fire access road:

a. The turnaround or hammerhead shall have a 20-foot minimum inside turning radius and a 40-foot minimum outside turning radius, and

b. The length of the turnaround / hammerhead shall be a minimum of 65 feet in length.

2. For all other fire access roads:

a. The turnaround / hammerhead shall have a 28-foot minimum inside turning radius and a 50-foot minimum outside turning radius, and

b. The length of the turnaround / hammerhead leg shall be a minimum of 70 feet in length.

Fire access turnaround / hammerhead design examples are available online via the Fire Marshal's Office, Fire Development Services website.

W. Section 503 of the International Fire Code is amended by substituting subsection 503.2.5 with the following:

Section 503.2.5. **Fire Access Road Dead-End.** Dead-end fire apparatus access roads in excess of 150 feet in length shall be provided with a turnaround that is approved by the Fire Marshal and shall be in accordance with subsection 503.2.4.1.

Exception: The Fire Marshal is authorized to increase the length up to 200 feet for dead-end access roads when all of the following apply:

1. The road is serving no more than 4 single-family homes that are equipped throughout with an approved automatic fire sprinkler system.

2. The road shall have an unobstructed width of not less than 20 feet, and an unobstructed vertical clearance of not less than 13 feet 6 inches.

3. Where the vertical distance between the grade plane and the highest point of the roof eave is no more than 30 feet for any of the structures served by the fire access road.

X. Section 503 of the International Fire Code entitled “Fire Apparatus Access Roads” is amended by substituting subsection 503.2.6 with the following:

Section 503.2.6. **Bridges and Elevated Surfaces.** Where a bridge or an elevated surface is part of a fire apparatus access road, the bridge or elevated surface shall be constructed and maintained in accordance with specifications established by the Fire Marshal and the City’s public works director, or their designees; at a minimum, however, the bridge or elevated surface shall be constructed and maintained in accordance with AASHTO Standard Specifications for Highway Bridges.

1. Bridges and elevated surfaces shall be designed for a live load sufficient to carry the imposed loads of an 85,000 lb. fire apparatus, the total imposed load to be determined by the Fire Marshal.

2. Vehicle load limits shall be posted at both entrances to bridges when required by the Fire Marshal.

3. Where elevated surfaces designed for emergency vehicle use are adjacent to surfaces that are not designed for that use, approved barriers or approved signs, or both, shall be installed and maintained, if required by the Fire Marshal.

Y. Section 503 of the International Fire Code entitled “Fire Apparatus Access Roads” is amended by substituting subsection 503.2.7 with the following:

Section 503.2.7. **Grade.** Fire apparatus access roads shall comply with the following:

1. The grade of the access road to not exceed 15 percent and the cross slope shall not exceed 6 percent.

2. Driveway approach and departure angles for fire apparatus access shall not exceed 10 percent for the first 75 feet when measured from the right of way, unless otherwise approved by the Fire Marshal.

Z. Section 503 of the International Fire Code entitled “Fire Apparatus Access Roads” is amended by adding the following new subsection 503.2.1.1:

Section 503.2.1.1. **Access Roads With a Fire Hydrant.** Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet for 20 feet on both sides of the hydrant operating nut, as shown in D103.1 and shall be marked as a fire lane per Section 503.3.

AA. Section 503 of the International Fire Code entitled “Security Gates” is amended by substituting subsection 503.6 with the following:

Section 503.6 **Security Gates, Bollards, And Other Obstructions.** The installation of security gates, bollards or other obstructions across a fire apparatus access road shall be reviewed and approved by the Fire Marshal. The use of directional-limiting devices (tire spikes) is prohibited. Where security gates, bollards or other obstructions are installed, they shall have an approved means of emergency operation. The security gates, bollards or other obstruction and the emergency operation shall be maintained operational at all times.

1. Electric gate operators, where provided, shall be listed in accordance with UL 325.

2. Gates intended for automatic operation shall be designed, constructed, and installed to comply with the requirements of ASTM F 2200 and must be equipped with “Click 2 Enter” or similar equipment that is approved by the Fire Marshal, that allows for operations of the gate by Fire and Police personnel via their vehicle mobile radio, on a dedicated radio frequency, with a hold-open for a specified amount of time.

3. Gates over the fire access road that are intended for automatic operation shall be designed to operate during a loss of power or fail in the open position.

4. Gates shall be at a minimum as wide as the required access road width. Gates, bollards, or other obstructions on commercial properties must be set back 30 feet from roadway edge of pavement.

5. If manually operated gates are installed across a fire access road, a Knox padlock is required if the gate is locked.

Exception: Automated gates equipped with “Click 2 Enter” or other authorized equipment that allows for operation of the gate by Fire and Police personnel from their vehicle are not required to be set back 30 feet.

BB. Section 504 of the International Fire Code entitled “Access to Building Openings and Roofs” is amended by adding the following new subsection 504.5:

Section 504.5 **Buildings With Interior Courtyards.** New buildings with enclosed interior courtyards shall have a straight/direct access corridor and/or stairway from the exterior to the courtyard at a location acceptable to the Fire Marshal. If a stairway is used it shall comply with International Fire Code Section 1011 and a corridor shall comply with International Fire Code Section 1020. The access shall have a minimum width of 5 feet and be large enough to carry a 35-foot-long sectional ladder (minimum folded length 20 feet) directly from the exterior to the courtyard without obstructions. The access door shall be marked at the street as “Direct Fire Access to Courtyard”.

CC. Section 510 of the International Fire Code entitled "Emergency Responder Radio Coverage" is amended by substituting Section 510 with the following language:

Section 510.1 Emergency Responder Radio Coverage (New Buildings). Approved radio coverage for emergency responders shall be provided within buildings that meet any one of the following conditions:

1. The building is five stories or more above grade plane (as defined by the International Building Code, Section 202); or
2. The total building area is 50,000 square feet or more; or
3. The total basement area is 10,000 square feet or more; or
4. There are floors used for human occupancy more than 30 feet below the finished floor of the lowest level of exit discharge; or
5. Buildings or structures where the Fire or Police Chief determines that in-building radio coverage is critical because of its unique design, location, use or occupancy.

The radio coverage system shall be installed in accordance with Section of this code and with the provisions of NFPA 1221 (current edition).

Exceptions:

1. Buildings and areas of buildings that have minimum radio coverage signal strength levels of the King County Regional 800 MHz Radio System within the building in accordance with Section 510.4.1 without the use of a radio coverage system.
2. In facilities where emergency responder radio coverage is required and such systems, components or equipment required could have a negative impact on the normal operations of that facility, the Fire Marshal shall have the authority to accept an automatically activated emergency responder radio coverage system.
3. One- and two-family dwellings and townhouses.

When determining if the minimum signal strength referenced in Section 510.4.1.1 exists at a subject building, the signal strength shall be measured at any point on the exterior of the building up to the highest point on the roof.

Section 510.2 Emergency Responder Radio Coverage (Existing Buildings).

Existing buildings shall be provided with approved radio coverage for emergency responders when:

1. Whenever an existing wired communications system cannot be repaired or is being replaced.
2. When a building undergoing substantial alteration meets any one of the conditions listed in Section 510.1. For purposes of this section, a substantial alteration shall be defined as an alteration that costs 50 percent or more of the

current assessed value of the structure and impacts more than 50 percent of the gross floor area.

3. When buildings, classes of buildings or specific occupancies do not have the minimum radio coverage signal strength as identified in Section 510.4.1 and the Fire or Police Chief determines that the lack of minimum signal strength poses an undue risk to emergency responders that cannot be reasonably mitigated by other means.

Section 510.3 Permit Required. A Construction Permit for the installation of or modification to emergency responder radio coverage systems and related equipment is required as specified in Section 105.7.6. Maintenance performed in accordance with this code is not considered a modification and does not require a permit.

Prior coordination and approval from the Public Safety Radio System Operator is required before installation of an Emergency Responder Radio System. Until PSERN is the single operator of the county wide system (projected date Q4 2022 / Q1 2023), such approval is required from EPSCA, King County, Seattle or ValleyCom depending on the location of the installation. To be forward compatible, designers and contractors should be aware of PSERN's requirements for Distributed Antenna Systems which can be found on their website (<https://PSERN.org>).

Section 510.4 Technical Requirements. Systems, components and equipment required to provide the emergency responder radio coverage system shall comply with Sections 510.4.1 through 510.4.2.8.

Section 510.4.1 Emergency responder communication enhancement system signal strength. The building shall be considered to have acceptable emergency responder communications enhancement system coverage when signal strength measurements in 95 percent of all areas on each floor of the building meet the signal strength requirements in Sections 510.4.1.1 through 510.4.1.3.

Exception: Critical areas, such as the fire command center(s), the fire pump room(s), interior exit stairways, exit passageways, elevator lobbies, standpipe cabinets, sprinkler sectional valve locations, and other areas required by the Fire Marshal, shall be provided with 99 percent floor area radio coverage.

Section 510.4.1.1 Minimum signal strength into the building. The minimum inbound signal strength shall be sufficient to provide usable voice communications throughout the coverage area as specified by the Fire Marshal. The inbound signal level shall be a minimum of -95dBm in 95 percent of the coverage area and 99 percent in critical areas and sufficient to provide not less than a Delivered Audio Quality (DAQ) of 3.0 or an equivalent Signal-to-Interference-Plus-Noise Ratio (SINR) applicable to the technology for either analog or digital signals.

Section 510.4.1.2 **Minimum signal strength out of the building.** The minimum outbound signal strength shall be sufficient to provide usable voice communications throughout the coverage area as specified by the Fire Marshal. The outbound signal level shall be sufficient to provide not less than a DAQ of 3.0 or an equivalent SINR applicable to the technology for either analog or digital signals. A minimum signal strength of -95 dBm shall be received by the King County Regional 800 MHz Radio System when transmitted from within the building.

Section 510.4.1.3 **System performance.** Signal strength shall be sufficient to meet the requirements of the applications being utilized by public safety for emergency operations through the coverage area as specified by the radio system manager in Section 510.4.2.2.

Section 510.4.2 **System design.** The emergency responder radio coverage system shall be designed in accordance with Sections 510.4.2.1 through 510.4.2.8 and NFPA 1221 (2019).

Section 510.4.2.1 **Amplification systems and components.** Buildings and structures that cannot support the required level of radio coverage shall be equipped with systems and components to enhance the public safety radio signals and achieve the required level of radio coverage specified in Sections 510.4.1 through 510.4.1.3. Public safety communications enhancement systems utilizing radio-frequency-emitting devices and cabling shall be allowed by the Public Safety Radio System Operator. Prior to installation, all RF-emitting devices shall have the certification of the radio licensing authority and be suitable for public safety use.

Section 510.4.2.2 **Technical criteria.** The Public Safety Radio System Operator shall provide the various frequencies required, the location of radio sites, the effective radiated power of radio sites, the maximum propagation delay in microseconds, the applications being used and other supporting technical information necessary for system design upon request by the building owner or owner's representative.

Section 510.4.2.3 **Power supply sources.** Emergency responder radio coverage systems shall be provided with dedicated standby batteries or provided with 2-hour standby batteries and connected to the facility generator power system in accordance with Section 1203. The standby power supply shall be capable of operating the emergency responder radio coverage system at 100 percent system capacity for a duration of not less than 12 hours.

Section 510.4.2.4 **Signal booster requirements.** If used, signal boosters shall meet the following requirements:

1. All signal booster components shall be contained in a National Electrical Manufacturer's Association (NEMA) 4, IP66-type waterproof cabinet or equivalent.

Exception: Listed battery systems that are contained in integrated battery cabinets.

2. Battery systems used for the emergency power source shall be contained in a NEMA 3R or higher-rated cabinet, IP65-type waterproof cabinet or equivalent.

3. Equipment shall have FCC or other radio licensing authority certification and be suitable for public safety use prior to installation.

4. Where a donor antenna exists, isolation shall be maintained between the donor antenna and all inside antennas to not less than 20dB greater than the system gain under all operating conditions.

5. Bi-Directional Amplifiers (BDAs) used in emergency responder radio coverage systems shall be fitted with anti-oscillation circuitry and per-channel AGC.

6. The installation of amplification systems or systems that operate on or provide the means to cause interference on any emergency responder radio coverage networks shall be coordinated and approved by the Public Safety Radio System Operator.

7. Unless otherwise approved by the Public Safety Radio System Operator, only channelized signal boosters shall be permitted.

Exception: Broadband BDAs may be utilized when specifically authorized in writing by the Public Safety Radio System Operator.

BDAs must also comply with PSERN's detailed requirements, which include channelized, minimum of 28 channels, supporting analog, P25 Phase I (FDMA), and P25 Phase II (TDMA). Information regarding PSERN requirements can be found via their website (<https://PSERN.org>).

Section 510.4.2.5 **System monitoring.** The emergency responder radio enhancement system shall include automatic supervisory and trouble signals that are monitored by a supervisory service and are annunciated by the fire alarm system in accordance with NFPA 72. The following conditions shall be separately annunciated by the fire alarm system, or, if the status of each of the following conditions is individually displayed on a dedicated panel on the radio enhancement system, a single automatic supervisory signal may be annunciated on the fire alarm system indicating deficiencies of the radio enhancement system:

1. Loss of normal AC power supply.
2. System battery charger(s) failure.
3. Malfunction of the donor antenna(s).
4. Failure of active RF-emitting device(s).
5. Low-battery capacity at 70 percent reduction of operating capacity.
6. Active system component malfunction.
7. Malfunction of the communications link between the fire alarm system and the emergency responder radio enhancement system.

Section 510.4.2.6 **Additional frequencies and change of frequencies.** The emergency responder radio coverage system shall be capable of modification or expansion in the event frequency changes are required by the FCC or other radio licensing authority, or additional frequencies are made available by the FCC or other radio licensing authority.

Section 510.4.2.7 **Design documents.** The Fire Marshal shall have the authority to require “as-built” design documents and specifications for emergency responder communications coverage systems. The documents shall be in a format acceptable to the Fire Marshal.

Section 510.4.2.8 **Radio communication antenna density.** Systems shall be engineered to minimize the near-far effect. Radio enhancement system designs shall include sufficient antenna density to address reduced gain conditions.

Exceptions:

1. Class A narrow band signal booster devices with independent AGC/ALC circuits per channel.
2. Systems where all portable devices within the same band use active power control.

Section 510.5 **Installation requirements.** The installation of the public safety radio coverage system shall be in accordance with NFPA 1221 and Sections 510.5.1 through 510.5.7.

Section 510.5.1 **Approval prior to installation.** Amplification systems capable of operating on frequencies licensed to any public safety agency by the FCC or other radio licensing authority shall not be installed without prior coordination and approval of the Public Safety Radio System Operator.

Section 510.5.2 **Minimum qualifications of personnel.** The minimum qualifications of the system designer and lead installation personnel shall include both of the following:

1. A valid FCC-issued general radio telephone operator's license.
2. Certification of in-building system training issued by an approved organization or approved school, or a certificate issued by the manufacturer of the equipment being installed.

Section 510.5.3 **Acceptance test procedure.** Where an emergency responder radio coverage system is required, and upon completion of installation, the building owner shall have the radio system tested to verify that two-way coverage on each floor of the building is in accordance with Section 510.4.1. The test procedure shall be conducted as follows:

1. Each floor of the building shall be divided into a grid of 20 approximately equal test areas, with a maximum test area size of 6,400 square feet. Where the floor area exceeds 128,000 square feet, the floor shall be divided into as many approximately equal test areas as needed, such that no test area exceeds the maximum square footage allowed for a test area.

2. Coverage testing of signal strength shall be conducted using a calibrated spectrum analyzer for each of the test grids. A diagram of this testing shall be created for each floor where coverage is provided, indicating the testing grid used for the test in Section 510.5.3(1), and including signal strengths and frequencies for each test area. Indicate all critical areas.

3. Functional talk-back testing shall be conducted using two calibrated portable radios of the latest brand and model used by the agency's radio communications system or other equipment approved by the Fire Marshal. Testing shall use Digital Audible Quality (DAQ) metrics, where a passing result is a DAQ of 3 or higher. Communications between handsets shall be tested and recorded in the grid square diagram required by Section 510.5.3(2): each grid square on each floor; between each critical area and a radio outside the building; between each critical area and the fire command center or fire alarm control panel; between each landing in each stairwell and the fire command center or fire alarm control panel.

4. Failure of more than 5 percent of the test areas on any floor shall result in failure of the test.

Exception: Critical areas shall be provided with 99 percent floor area coverage.

5. In the event that two of the test areas fail the test, in order to be more statistically accurate, the floor shall be permitted to be divided into 40 equal test areas. Failure of not more than two nonadjacent test areas shall not result in failure of the test. If the system fails the 40-area test, the system shall be altered to meet the 95 percent coverage requirement.

6. A test location approximately in the center of each test area shall be selected for the test, with the radio enabled to verify two-way communications to and from the outside of the building through the public agency's radio communications system. Once the test location has been selected, that location shall represent the entire test area. Failure in the selected test location shall be considered to be a failure of that test area. Additional test locations shall not be permitted.

7. The gain values of all amplifiers shall be measured, and the test measurement results shall be kept on file with the building owner so that the measurements can be verified during annual tests. In the event that the measurement results become lost, the building owner shall be required to rerun the acceptance test to reestablish the gain values.

8. As part of the installation, a spectrum analyzer or other suitable test equipment shall be utilized to ensure spurious oscillations are not being generated by the subject signal booster. This test shall be conducted at the time of installation and at subsequent annual inspections.

9. Systems incorporating Class B signal booster devices or Class B broadband fiber remote devices shall be tested using two portable radios simultaneously conducting subjective voice quality checks. One portable radio shall be positioned not greater than 10 feet (3048 mm) from the indoor antenna. The second portable radio shall be positioned at a distance that represents the farthest distance from any indoor antenna. With both portable radios simultaneously keyed up on different frequencies within the same band, subjective audio testing shall be conducted and comply with DAQ levels as specified in Sections 510.4.1.1 and 510.4.1.2.

10. Documentation maintained on premises. At the conclusion of the testing, and prior to issuance of the building Certificate of Occupancy, the building owner or owner's representative shall place a copy of the following records in the DAS enclosure or the building engineer's office. The records shall be available to the Fire Marshal and maintained by the building owner for the life of the system:

a. A certification letter stating that the emergency responder radio coverage system has been installed and tested in accordance with this code, and that the system is complete and fully functional.

b. The grid square diagram created as part of testing in Sections 510.5.3(2) and 510.5.3(3).

c. Data sheets and/or manufacturer specifications for the emergency responder radio coverage system equipment; back up battery; and charging system (if utilized).

d. A diagram showing device locations and wiring schematic,

e. A copy of the electrical permit.

11. Acceptance test reporting to Fire Marshal. At the conclusion of the testing, and prior to issuance of the building Certificate of Occupancy, the building owner or owner's representative shall submit to the Fire Marshal an acceptance test report that includes items (10a-10e).

Section 510.5.4 FCC compliance. The emergency responder radio coverage system installation and components shall comply with all applicable federal regulations including, but not limited to, FCC 47 CFR Part 90.219.

Section 510.5.5 Mounting of the donor antenna(s). To maintain proper alignment with the system designed donor site, donor antennas shall be permanently affixed on the highest possible position on the building or where approved by the Fire Marshal. A clearly visible sign shall be placed near the antenna stating, "movement or repositioning of this antenna is prohibited without approval from the Fire Marshal or designee." The antenna installation shall be in accordance with the applicable requirements in the International Building Code for weather protection of the building envelope.

Section 510.5.6 Wiring. The backbone, antenna distribution, radiating, or any fiber-optic cables shall be rated as plenum cables. The backbone cables shall be connected to the antenna distribution, radiating, or copper cables using hybrid coupler devices of a value determined by the overall design. Backbone cables shall be routed through an enclosure that matches the building's required fire-resistance rating for shafts or interior exit stairways. The connection between the backbone cable and the antenna cables shall be made within an enclosure that matches the building's fire-resistance rating for shafts or interior exit stairways, and passage of the antenna distribution cable in and out of the enclosure shall be protected as a penetration per the International Building Code.

Section 510.5.7 **Identification Signs.** Emergency responder radio coverage systems shall be identified by an approved sign located on or near the Fire Alarm Control Panel or other approved location stating "This building is equipped with an Emergency Responder Radio Coverage System. Control Equipment located in room".

A sign stating "Emergency Responder Radio Coverage System Equipment" shall be placed on or adjacent to the door of the room containing the main system components.

Section 510.6 **Maintenance.** The emergency responder radio coverage system shall be maintained operational at all times in accordance with Sections 510.6.1 through 510.6.7.

Section 510.6.1 **Testing and proof of compliance.** The owner of the building or owner's authorized agent shall have the emergency responder radio coverage system inspected and tested annually or where structural changes occur including additions or remodels that could materially change the original field performance tests. Testing shall consist of the following items (1) through (7):

1. In-building coverage test as required by the Fire Marshal as described in Section 510.5.3, "Acceptance test procedure," or 510.6.1.1, "Alternative in-building coverage test".

Exception: Group R Occupancy annual testing is not required within dwelling units.

2. Signal boosters shall be tested to verify that the gain/output level is the same as it was upon initial installation and acceptance or set to optimize the performance of the system.

3. Backup batteries and power supplies shall be tested under load of a period of 1 hour to verify they will properly operate during an actual power outage. If within the 1-hour test period the battery exhibits symptoms of failure, the test shall be extended for additional 1-hour periods until the integrity of the battery can be determined.

4. If a fire alarm system is present in the building, a test shall be conducted to verify that the fire alarm system is properly supervising the emergency responder communication system as required in Section 510.4.2.5. The test is performed by simulating alarms to the fire alarm control panel. The certifications in Section 510.5.2 are sufficient for the personnel performing this testing.

5. Other active components shall be checked to verify operation within the manufacturer's specifications.

6. At the conclusion of the testing, a report that shall verify compliance with Section 510.6.1 shall be submitted to the Fire Marshal by way of the department's third-party compliance vendor.

7. At the conclusion of testing, a record of the inspection and maintenance along with an updated grid diagram of each floor showing tested strengths in each grid square and each critical area shall be added to the documentation maintained on the premises in accordance with Section 510.5.3.

Section 510.6.1.1 **Alternative In-building coverage test.** When the comprehensive test documentation required by Section 510.5.3 is available, or the most recent full five-year test results are available if the system is older than six years, the in-building coverage test required by the Fire Marshal in Section 510.6.1(1), may be conducted as follows:

1. Functional talk-back testing shall be conducted using two calibrated portable radios of the latest brand and model used by the agency's radio communications system or other equipment approved by the Fire Marshal. Testing shall use Digital Audible Quality (DAQ) metrics, where a passing result is a DAQ of 3 or higher. Communications between handsets in the following locations shall be tested: between the fire command center or fire alarm control panel and a location outside the building; between the fire alarm control panel and each landing in each stairwell.

2. Coverage testing of signal strength shall be conducted using a calibrated spectrum analyzer for:

(a) Three grid areas per floor. The three grid areas to be tested on each floor are the three grid areas with poorest performance in the acceptance test or the most recent annual test, whichever is more recent; and

(b) Each of the critical areas identified in acceptance test documentation required by Section 510.5.3, or as modified by the Fire Marshal, and

(c) One grid square per serving antenna.

3. The test area boundaries shall not deviate from the areas established at the time of the acceptance test, or as modified by the Fire Marshal. The building shall be considered to have acceptable emergency responder radio coverage when the required signal strength requirements in Sections 510.4.1.1 and 510.4.1.2 are located in 95 percent of all areas on each floor of the building and 99 percent in Critical Areas, and any non-functional serving antenna are repaired to function within normal ranges. If the documentation of the acceptance test or most recent previous annual test results are not available or acceptable to the Fire Marshal, the radio coverage verification testing described in 510.5.3 shall be conducted.

The alternative in-building coverage test provides an alternative testing protocol for the in-building coverage test in subsection (1) of Section 510.6.1. There is no change or alternative to annual testing requirements enumerated in subsections (2) – (7) of Section 510.6.1, which must be performed at the time of each annual test.

Section 510.6.2 **Additional frequencies.** The building owner shall modify or expand the emergency responder radio coverage system at his or her expense in the event frequency changes are required by the FCC or other radio licensing authority, or additional frequencies are made available by the FCC or other radio licensing authority Public Safety Radio System Operator or FCC license holder. Prior approval of a public safety radio coverage system on previous frequencies does not exempt this section.

Section 510.6.3 **Nonpublic safety system.** Where other nonpublic safety amplification systems installed in buildings reduce the performance or cause interference with the emergency responder communications coverage system, the nonpublic safety amplification system shall be corrected or removed.

Section 510.6.4 **Field testing.** The Fire Marshal or designee shall have the right to enter onto the property at any reasonable time to conduct field testing to verify the required level of radio coverage or to disable a system that due to malfunction or poor maintenance has the potential to impact the emergency responder radio system in the region.

DD. Section 901 of the International Fire Code entitled "General" is amended by adding the following new subsection 901.7.9:

Section 901.7.9 **Fire Watch for Impaired Fire Protection Systems.** In the event of failure of the emergency responder radio system, fire alarm system, fire sprinkler system or any other required fire protection system; or an excessive number of accidental alarm activations, the Fire Marshal is authorized to require the building owner or occupant to provide standby personnel as set forth in the International Fire Code until the system is restored, repaired or replaced.

EE. Section 5601 of the International Fire Code entitled "General" is amended by adding the following new subsection 5601.3.1:

Section 5601.3.1 **Storage.** The limits referred to in Chapter 56, Sections 5601.2.1, 5601.2.3 and 5601.3 of the International Fire Code, in which storage of explosives and blasting agents is prohibited, shall apply throughout the City.

FF. Section 5608 of the International Fire Code entitled "Fireworks Display" is amended by substituting the following subsection 5608.2:

Section 5608.2 **Fireworks Prohibited.** No person, firm or corporation shall manufacture, sell, or store fireworks in the City of Tukwila, except for a person granted a permit for a public display of fireworks shall be allowed to buy, possess, and store fireworks according to the permit granted.

1. **Fireworks Discharge Prohibited.** No person shall ignite or discharge any fireworks at any time.

Exceptions:

a. Displays authorized by permit issued by the City pursuant to RCW 70.77.260(2) now or as hereafter amended.

b. Use by a group or individual for religious or other specific purposes on an approved date at an approved location pursuant to a permit issued pursuant to RCW 70.77.311(2)(c) now or hereafter amended and as required by Tukwila Municipal Code.

c. Use of trick and novelty devices as defined in WAC 212-17-030, as amended, and as hereafter amended and use of agricultural and wildlife fireworks as defined in WAC 212-17-045, as amended and as hereafter amended.

2. Any person who violates any portion of this ordinance shall be subject to having their fireworks confiscated as provided for in RCW 70.77.435, and shall be guilty of a civil violation and penalty as provided in TMC Chapter 8.45.

GG. Section 5608 of the International Fire Code entitled "Fireworks Display" is amended by adding the following new subsection 5608.2.3:

Section 5608.2.3 **Pyrotechnic Display Requirements.** All fireworks displays shall conform to the following minimum standards and conditions:

1. All fireworks displays must be planned, organized, and discharged by a state-licensed pyrotechnician.

2. All pyrotechnic displays must comply with applicable requirements set forth in the WAC and RCW's, the International Fire Code, applicable NFPA codes, and as required by the Tukwila Municipal Code.

3. A Pyrotechnic Display Permit must be submitted at least 45 days prior to the desired display date. Approval by the Fire Marshal is required prior to any display of pyrotechnics or the setup of the pyrotechnic display.

4. The fee for a Pyrotechnic Display Permit shall be in accordance with the Fire Department Fee Schedule adopted by resolution of the City Council.

5. At the discretion of the Fire Chief that such requirement is necessary to preserve the public health, safety and welfare, the Pyrotechnic Display Permit may require that Fire Department apparatus and fire personnel be on site from 30 minutes prior to the start until 30 minutes after the conclusion of the display. All compensation/costs

for fire personnel and apparatus will be paid by the applicant in accordance with the fee schedule adopted by resolution of the City Council and amended from time to time.

6. Permits granted shall be in effect for the specified event, date and time. Permit applications shall specify if a pyrotechnic display is needed for a multi-day event (example: pyrotechnics for professional sports season, concert, or other multi-day event).

7. An approved Pyrotechnic Display Permit shall not be transferable.

8. The Chief of Police and the Fire Marshal are both directed to administer and enforce the provisions of this chapter. Upon request by the Chief of Police or the Fire Marshal, all other City departments and divisions are authorized to assist them in enforcing this chapter.

9. An approved Pyrotechnic Display Permit may be immediately revoked at any time deemed necessary by the Fire Marshal due to any noncompliance or weather conditions such as extremely low humidity or wind factor. The display may also be canceled by accidental ignition of combustible or flammable material in the vicinity due to fall debris from the display.

10. For displays other than the 4th of July, the permit application must also include a public notification plan for affected residents or businesses. This may include newspaper, radio, and/or television announcements; door to door distribution of written announcements; reader boards and/or other methods or media. The public notification plan is subject to approval by the Fire Chief or designee. Costs associated with public notification to affected residents shall be borne by the permit applicant.

HH. Section 5704 of the International Fire Code entitled "Storage" is amended by adding the following subsection 5704.1.2:

Section 5704.1.2 **Tank Installation Restrictions.** The installation of flammable and combustible liquid tanks shall comply with all applicable City standards, regulations, and zoning restrictions.

II. Appendix B of the International Fire Code entitled "Fire-Flow Requirements For Buildings" is amended Appendix B Table B105.2, "Required Fire Flow," per the following:

Table B105.2 **Required Fire Flow.** The percentage used in Table B105.2 shall be 50% of the required fire flow.

(Ord 2650 §7, 2021)

16.16.050 Fees

A. **Fire Marshal's Office Fees, and Fees for Fire Development Services, Fire Code Enforcement Services, and Fire Penalties.** Fees shall be in accordance with the Fire Department Fee Schedule adopted by resolution of the City Council.

B. Re-Inspection Fees:

1. **Re-Inspection Fees for Fire Development Permits.** When a construction inspection is scheduled for a Fire Development Permit and when the Fire Inspector arrives and finds that the work is not complete, or not ready for the inspection, or the permit construction documents are not on site, or the work does not comply with fire code requirements, another inspection will be required, and a re-inspection fee in accordance with the Fire Department Fee Schedule adopted by resolution of the City Council will be assessed and required to be paid before a follow-up inspection may be scheduled.

2. **Re-inspection Fees for Operational Permit Inspections, Life Safety Inspections, New Business Inspections, and Fire Code Enforcement Inspections.** A re-inspection fee will be assessed if, at a re-inspection, the Fire Inspector finds that the violations have not been corrected. The re-inspection fee(s) shall be in accordance with the Fire Department Fee Schedule adopted by resolution of the City Council and will be assessed and required to be paid before the inspection will be completed.

C. **False Alarms.** False alarms shall not be given, signaled or transmitted or caused or permitted to be given, signaled or transmitted in any manner. After the first false alarm, any further false alarms shall be fined under the fee referenced in TMC Section 8.08.040.

(Ord 2650 §8, 2021)

16.16.060 Conflicts with Existing Codes and Ordinances

Whenever any provision of the International Fire Code or appendices adopted by this ordinance conflicts with any provision of any other adopted code or ordinance of the City, the provision providing the greater or most effective protection shall govern.

(Ord 2650 §9, 2021)